

Serial No. 10/509,509

Docket No. MC1-7307

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This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A non-contact passive medical scanning imager for imaging subcutaneous body temperature comprising:
 - a detector for sensing millimeter wave electromagnetic radiation;
 - a collector for collecting radiation emitted from a patient and directing that radiation along a collection path to the detector in such a manner that the collected radiation has a defined sensitivity profile across and along substantially the entire length of the collection path;
 - scanning means for causing a scan of a target area of the patient, and
 - ~~a quasi-optical isolator~~ isolation means in the path of the collected radiation for preventing signal leakage from the detector being emitted towards the patient's body.
2. (Previously Presented) An imager as claimed in claim 1, wherein the collector comprises a corrugated feedhorn.
3. (Previously Presented) An imager as claimed in claim 1, wherein the collector comprises a waveguide for supplying radiation to the detector.
4. (Previously Presented) An imager as claimed in claim 1, wherein the collector is such that the collected radiation has a Gaussian sensitivity profile.
5. (Previously Presented) An imager as claimed in claim 2, wherein the feedhorn is arranged to convert a fundamental Gaussian mode beam of radiation into a waveguide mode in which radiation propagates through a wave guide to the detector.

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6. (Previously Presented) An imager as claimed in claim 1 wherein the collector is such that the collected radiation has a Bessel sensitivity profile.

7. (Previously Presented) An imager as claimed in claim 6 including an axicon in the path of the collected radiation and configured to convert the Bessel sensitivity profile of the collected radiation to a Gaussian sensitivity profile.

8. (Previously Presented) An imager as claimed in claim 1 wherein the collector includes focusing means.

9. (Previously Presented) An imager as claimed in claim 1, wherein the scanning means are operable to repeatedly sweep the collection path through 360°.

10. (Previously presented) An imager as claimed in claim 9, wherein the scanning means comprise a deflector that is rotatable about one axis to scan the collection path in a scanning direction across a body.

11. (Previously presented) An imager as claimed in claim 10 further comprising line-indexing means for moving the collection path in a direction perpendicular to the scanning direction.

12. (Previously Presented) An imager as claimed in claim 11, wherein the indexing means are operable to swing the deflector about a second axis perpendicular to the first axis.

13. (Previously Presented) An imager as claimed in claim 1, wherein the imager is operable to form an image from emitted radiation in the frequency range of 90-100GHz.

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14. (Previously Presented) An imager as claimed in claim 1, further comprising at least one calibration load for emitting millimeter wave radiation at a pre-determined intensity, the imager being operable to direct said radiation to the detector to enable the imager to be calibrated.

15. (Previously presented) An imager as claimed in claim 14, wherein the calibration load is provided in the scanning path of the imager, so that the imager can be calibrated for each pass of the collector.

16. (Previously Presented) An imager as claimed in claim 14, wherein two calibration loads are provided, together with means for maintaining them at different temperatures, the temperatures straddling the range of subcutaneous body temperatures to be imaged.

17. (Previously Presented) An imager as claimed in claim 1 wherein the detector is linearly polarized.

18. (Previously Presented) An imager as claimed in claim 17 further including polarization means for altering the polarization of received radiation so as to align with the polarization of the detector.

19. (Previously Presented) An imager as claimed in claim 1 wherein the scanning means scans the target area of the patient such that the collection path is in the form of a circumference of a notional cylinder at each of a plurality of indexed steps.

20. (Previously Presented) An imager as claimed in claim 1 wherein a given spot on the collection path resides on a focal plane of the scanning means, such that the sensitivity profile is symmetrical and reduced about the given spot along the collection path.

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21. (Previously Presented) An imager as claimed in claim 1 wherein the defined sensitivity profile of the collection path is non-uniform across and along the collection path based on known changes in a location of a focal spot of the scanning means along the collection path.
22. (New) An imager as claimed in claim 1, wherein the isolation means comprises a quasi-optical isolator.